concretions can almost as readily be construed into the forms of Natica, Nerita and Paludina as they are shown in the somewhat similar clays of the Port Hudson age, on the islands of Petite Anse and Côte Blanche. Here every degree of transition from the almost perfect shell into the roundish concretions can be traced; and I do not despair of a similar state of things being found within the largest calcareous deposit of the Grand Gulf area on the Anacoco when it shall be examined more at leisure than it was possible for me to do in 1869.

So far then as the central portion of the Grand Gulf formation in Mississippi and Louisiana is concerned, I see no escape from the conclusion that the sandstones and associated clays are rightly considered as being of one and the same geological age and formation, whether representing the upper Oligocene or later stages of the Tertiary. The hiatus between it and the Lafayette is emphasized alike by the extension of the latter two hundred and fifty miles farther inland, and by the totally changed lithological character of the materials, a change so great that it is hard to believe that the same Gulf waters should have produced both at any short interval of time. The conformity of the Lafayette to the Grand Gulf, referred to by Dr. Dall, is rather a delicate question when dealing with a formation of which stratification lines and dips are hardly predicable. The Lafayette overlies the Grand Gulf as it overlies every other formation in Mississippi and Louisiana, and it is there undoubtedly the next succeeding formation; but intervening beds may be found elsewhere. What was the nature of the event that caused the remarkable change in the whole nature and distribution of the two deposits must still, I think, be considered an unsolved problem.

E. W. Hilgard.

Berkeley, Cal.
July 22, 1903.

ANTARCTICA.

To the Editor of Science: My many American friends will be amused by the innuendo that I hate Americans which runs through Mr. Balch's notice (in your issue of July 10) of my review of his book in the *Geographical Journal* for May. It has always been a privilege of men of science to criticise each other's work as if they were members of one family, and I can conscientiously say for myself that I am without prejudice as to race, creed or nationality. Should I or any other European geographer differ from Mr. Balch or Fanning or Morrell, it is not because they are Americans and we are not, but because we think that in certain points they are mistaken.

The Atlantic is too wide for a comfortable controversy in a weekly journal to be conducted across it; and I do not think it would serve any useful end to reply to Mr. Balch's letter in detail. I fear that my review is too long for you to reprint, but nothing shorter would give a correct impression of my opinions on the points dealt with in Mr. Balch's very stimulating book. I should be glad if both were widely read.

Yours is a land of millionaires; the Antarctic is still scarcely touched by explorers, and all nations would rejoice to see a well-equipped American expedition sent out to help to solve the present problems which after all are those most nearly concerning us.

Hugh Robert Mill.

62 Camden Square, London, N. W.,
July 21, 1903.

SHORTER ARTICLES.

A NEW MOSQUITO.

Since mosquitoes have attracted so much attention of late through the part they play in the transmission of certain diseases, anything new that pertains to them or their life history may be of importance. In view of this fact, a brief description of a new species—which has been given the name of *Eucorethra underwoodi*—should be of interest. While this particular insect does not bite, and for this reason should not perhaps be regarded as a true mosquito, it has, however, been classed as one since it belongs to the family Culicidæ. The larvæ of this insect were found by me on January 27, 1903, in the Maine woods in the eastern

section of Penobscot County, and were discovered in a spring of water from which a crew of lumbermen were getting their water supply. A few days later, I found other larvæ of the same species in a similar spring about eight miles distant, though in this case, as the spring was not in use, it was covered with a coating of ice an inch thick. The temperature of the water at the bottom (it was about two feet deep) was 42° F.

At first sight this larva would be taken for an *Anopheles* of extraordinary size, as it is of the same general shape, and when the water was cleared of ice, it lay just beneath and parallel to the surface, breathing through a short respiratory siphon, as is characteristic of the larvæ of *Anopheles*. In this spring a barrel had been sunk and in the fifty gallons, or thereabouts, of water which it contained there were twenty-five larvæ. They were all of about the same size—12 to 14 mm. long—and almost black in color. All were secured and taken into camp for further investigation. Here they were kept for thirteen days at a temperature varying from 32° at night to 65° or 70° during parts of the day—an average temperature of about 45° F.

Close observation of the larvæ now showed that besides being much larger (12–14 mm. long instead of 5–7 mm.) they differed in many other particulars from the larvæ of *Anopheles*. In proportion to the rest of its body, its head is larger than the head of *Anopheles*. It does not turn its head upside down when feeding as does *Anopheles*. Its mandibles are strikingly large and powerful and are prominently toothed. It lacks the frontal tufts or brushes which are conspicuously present in *Anopheles*, and its antennæ, which extend directly forward parallel with the sides of the head, are much longer and more slender, and are tipped each with three hairs of equal size. The thorax is broadly elliptical and is much wider in comparison with its abdominal segments than is the thorax of *Anopheles*. The sides of the thorax and the abdominal segments bear fanshaped tufts of hairs, not plumosed as in *Anopheles*. The tufts on the last segments, both dorsal and ventral, are more profuse in *Eucorethra* than in *Anopheles*, especially the ventral tuft which in *Eucorethra* occupies nearly the whole segment. Only two anal papillæ are present, while *Anopheles* has four.

A few days before I returned to Boston, several larvæ died and three changed to pupæ. The pupa resembles that of *Culex* rather than of *Anopheles* and its respiratory siphons are of the same shape as in *Culex*. When stretched out at full length, the pupa measures ten mm.

On reaching home, the new wigglers, eighteen in number, were put into a quart jar which was placed near a window where it would receive the sunlight for two hours each morning. The temperature of the water now averaged about 70° F., and with this change the larvæ developed a new trait—they began to eat each other up. I witnessed the act on several occasions. The larva would grasp its adversary just forward of the respiratory siphon with its powerful mouth parts, and working the tail in first it would gradually swallow its victim, shaking it now and then as a terrier would shake a rat.

After losing a part of my stock in this way, those that remained were separated, and each individual was placed in a small bottle by itself. Eventually, I succeeded in rearing a number of males and females. The pupal stage of this insect varies from five days and nine hours to six days and ten hours. The adult resembles *Anopheles* in having maculated or spotted wings, but is much larger and measures eleven millimeters in length. Its mouth parts, however, are not adapted for biting. A full description of the imago is soon to be recorded by Mr. D. W. Coquillett of the National Museum by whom the name above mentioned was given.

Drawings were made of all the different stages and on May 26, 1903, they were sent to Dr. L. O. Howard, chief of the Division of Entomology, at Washington.

On July 24, word was received from Dr. Howard that a new genus had been made for the insect and that Mr. D. W. Coquillett had named it *Eucorethra underwoodi*. I was also

informed that the same insect had been sent in during July from British Columbia where it had been found by Dr. H. G. Dyer, who was collecting for the department.

During a visit to Maine in June, a large number of larvæ of *Eucorethra* were taken from the spring where the barrel had been sunk. It was noticeable that larvæ of other kinds of mosquitoes were absent, although the adults were very numerous in the immediate vicinity. During the past month many more larvæ have been sent me from the same source.

I found that they were very fond of the larvæ of the different species of *Culex* and that they ate them, apparently with great relish. On several occasions fourteen *Eucorethra* larvæ ate, during the night, sixty *Culex* larvæ out of the seventy that had been placed in the water with them. When eating the larvæ of mosquitoes smaller than themselves, the victim is caught, shaken violently a few times, and swallowed in a few seconds in very much the same way that a pickerel would catch and swallow a smaller fish.

As yet no experiments have been made to see if this new species will devour the larvæ of *Anopheles* as readily as they will those of *Culex*. Whether or not this species will thrive in the climate of southern New England is as yet uncertain, but experiments are now being carried on to determine this point.

Wm. Lyman Underwood.
Mass. Institute of Technology,
Boston.

The Ascending Obelisk of the Montagne Pelée.

Not the least remarkable of the many extraordinary conditions that have been associated with the recent eruptions of the Martinique volcano is the extrusion of the giant tower of rock, a veritable obelisk, which today dominates the mountain, and which has given to it an added height of 800 to 900 feet. Pelée is no longer 4,200 or 4,428 feet in elevation, but upwards of 5,000 feet. On May 31 last, before it lost 180 feet of its summit, it reached exactly 5,200 feet. This tower of rock, the nature of which was first properly made known by Professor Lacroix, issues directly, and to all intents and purposes vertically, from the summit of the new cone of the volcano (of whatever precise nature this cone may be) which had been built up in the ancient crateral-basin (the Étang Sec) to a height of 1,600 feet or more, and virtually plugs it. Where it is implanted, it has a thickness of some 300 to 350 feet. From certain points of view the obelisk seems to maintain for most of its height (800+ feet) a fairly uniform thickness; from other points it shows a rapidly tapering surface, with a termination in a needle summit, a true *aiguille*. It is gently curved or arched toward the southwest, or in the direction of Saint Pierre, and on this face it is cavernous or openly slaggy, showing where successive and repeated explosions had carried away portions of the substance. On the opposite side, or toward the east-northeast, the surface appears solid, is smoothed and even polished in part, and shows longitudinal parallel grooves and striæ, very much like glacial markings. On this side it shows plainly the marks of hard attrition, the effect of rubbing upon the encasing rock—the mold, in fact, that determined a portion of the exit-channel.

The constitution of this extruded 'cork' is undeniably lava—a lava whose viscosity or rapid solidification did not permit it to flow over, but which under the giant stress of the volcano simply moved upward, solid from base to summit, and receiving accretions to its mass only from below. The most cursory examination of the relations existing would immediately point to this form of growth and development, but the carefully conducted angle-measurements and observations of contour made by the representatives at two stations of the French Scientific Commission leave no possibility of doubt in the matter, and they further furnish us with data touching the rate of growth. Thus, in eight days preceding June 7 this growth was, as we are informed by M. Giraud, ten meters; and in the four days preceding June 15 (a period within the time of my recent visit to the volcano) it measured six meters. The consideration of the depth to which this giant